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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,922	12/16/2003	Di Wei	10,692; 60246-223	5821
26/096 7590 03/11/2009 CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009				
EXAMINER				
MAYEKAR, KISHOR				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
03/11/2009		PAPER		

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DI WEI, THOMAS H. VANDERSPURT, STEPHEN O. HAY,
WAYDE R. SCHMIDT, and TIMOTHY N. OBEE

Appeal 2008-6360
Application 10/736,922
Technology Center 1700

Decided:¹ March 11, 2009

Before BRADLEY R. GARRIS, PETER F. KRATZ, and
KAREN M. HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-14, 17, 18, and 20-47. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

STATEMENT OF THE CASE

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

The invention relates to a purification system. Claim 1 is illustrative:

1. A purification system comprising:

a substrate having a first surface portion and a second surface portion adjacent the first surface portion; and

a layered catalytic coating including a first layer of one of metal/titanium dioxide and metal compound/titanium dioxide applied on said first surface portion and a second layer of one of titanium dioxide and metal compound/titanium dioxide applied on said second surface portion.

The Examiner relies upon the following prior art references in the rejections of the appealed claims:

Kobayashi	US 6,368,668	Apr. 9, 2002
Reisfeld	US 2003/0021720	Jan. 30, 2003

The Examiner rejected the claims under 35 U.S.C. § 103(a) as follows:²

claims 1-14, 17, 18, 34, 36, 45, and 46 as unpatentable over Kobayashi;

claims 7-12, 20, 33, 35, 37, 38, 43, and 44 as unpatentable over Kobayashi in view of Reisfeld; and

claims 21-32, 39-42, and 47 as unpatentable over Reisfeld in view of Kobayashi.

The Examiner also provisionally rejected claims 1-14, 17, 18, and 20-47 on the ground of non-statutory obviousness-type double patenting over

² The Examiner has withdrawn the final rejections of claim 47 under 35 U.S.C. § 112, first and second paragraphs (Ans. 3).

claims 1-22, 24-34, 36, and 37 of copending Application No. 10/736,921. Appellants have **not** contested this rejection (*see*, generally, App. Br.; Reply Br.). Accordingly, we summarily affirm this rejection.

Appellants have not separately argued claims the claims in the first ground of rejection with any reasonable degree of specificity. Accordingly, we select claim 1 as representative of the grouping above and confine our discussion to this selected claim. We will address the claims in the other grounds of rejection above to reflect Appellants' arguments in the Appeal Brief.

The § 103 Rejection based on Kobayashi

ISSUE

The issue turns on claim construction. Appellants' only argument is that this 103 rejection is improper because the Examiner's rationale that the claimed arrangement of layers "would have been an obvious matter of design choice" is not by itself "sufficient to support obviousness" (App. Br. 5). The Examiner's position, however, also includes an interpretation of claim 1 wherein both layers recited in claim 1 can be the same material and thus, claim 1 reads on the teachings of Kobayashi (Ans. 10).

Accordingly, the issue is:

Have Appellants shown that the Examiner reversibly erred in rejecting the claims because Kobayashi does not disclose or render obvious a layered catalytic coating as recited in claim 1?

This issue turns on the broadest reasonable interpretation of the claim language.

PRINCIPLES OF LAW

Claim Construction

It is well settled that the United States Patent and Trademark Office (PTO) is obligated to give claim terms their broadest reasonable interpretation, taking into account any enlightenment by way of definitions or otherwise found in the specification. *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007) (“[T]he PTO must give claims their broadest reasonable construction consistent with the specification Therefore, we look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation”); *See also In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

This longstanding principle is based on the notion that “during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed.” *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989). That is, a patent applicant has the opportunity and responsibility to remove any ambiguity in claim term meaning by amending the application. “Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.” *Id.* at 322.

Although claims are to be interpreted in light of the specification, limitations from the specification are not to be read into the claims. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

An applicant seeking a narrower construction must either show why the broader construction is unreasonable or amend the claim to expressly state the scope intended. *In re Morris*, 127 F.3d 1048, 1057 (Fed. Cir. 1997).

Obviousness

For a *prima facie* case of obviousness all the claim features must be taught or suggested by the applied prior art. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974).

FINDINGS OF FACTS

The following findings of fact are supported by a preponderance of the evidence. Additional findings of fact as necessary appear in the Analysis portion of the opinion.

1. Appellants' describe that it was known to use titanium dioxide as a photocatalyst in an air purifier to destroy contaminants (Spec. 1, para. [3]). Appellants further admit that doped or metal oxide titanium dioxide can increase the effectiveness of the titanium dioxide photocatalyst; e.g., gold may be loaded on the titanium dioxide for room temperature oxidation of carbon monoxide to carbon dioxide (Spec. 1-2, para. [4]).

3. Appellants' Specification does not include a special definition for the term "a layered catalytic coating".

4. Fig. 5 of Appellants' invention is reproduced below:

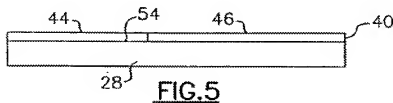


Fig. 5 illustrates one embodiment of the invention that includes layers 44 and 46 which are located immediately adjacent each other on the same substrate (Spec. 13-14, para. [63]; Fig. 5).

5. As found by the Examiner (e.g., Ans. 3-5), Kobayashi describes that photocatalysts on a substrate, upon irradiation, are useful for purification of harmful gases (e.g., col. 1, ll. 12-33). Kobayashi describes a photocatalytic metal oxide that, in a “preferred embodiment”, may be titanium dioxide (col. 3, ll. 63-66). The photocatalyst coating composition may further comprise a metal and/or metal oxide, for example, at least one metal or oxides of the metals, including copper, silver, platinum, cobalt, iron, nickel, gold, and manganese (col. 5, ll. 53-64).

Kobyashi states:

The addition of the metal or the metal oxide to the photocatalyst coating composition results in the formation of a film which can kill bacteria and mold deposited on the surface thereof even in a dark place.

....

According to a preferred embodiment of the present invention, the metal and the metal oxide are supported on the surface of the photocatalytic metal oxide.

(Kobyashi, col. 5, ll. 64-67; col. 6, ll. 13-15)

6. In addition, Kobayashi states:

According to a preferred embodiment of the present invention, the photocatalyst coating composition may be coated onto the surface of the substrate so as to form a stacked or multi-layered coating. Specifically, *an identical photocatalyst coating composition* may be coated on the surface of the substrate a plurality of times. Alternatively, *a plurality of different photocatalyst coating compositions* may be provided followed by successive coating of the *plurality of different photocatalyst coating compositions onto the surface of the substrate*.

(Kobayashi, col. 10, ll. 17-26; emphasis added)

ANALYSIS

Implicit in our review of the Examiner's obviousness analysis is that the claim must first have been correctly construed to define the scope and meaning of each contested limitation. See *Gechter v. Davidson*, 116 F.3d 1454, 1457 (Fed. Cir. 1997).

Appellants have the burden of showing that the Examiner's interpretation of the disputed claim language is unreasonable. The Examiner found that the claim language may be interpreted such that the same material is used for each layer; that is, each of the first and second layers may be a "metal compound/titanium dioxide" (Ans. 10). Appellants do not dispute this finding (generally, App. Br. and Reply Br.). In light of Appellants' Fig. 5, which shows that the layers may be side by side, we see no structural distinction in the claimed product between a single layer of one material and two layers applied side by side of the same material. Hence claim 1 reads on Kobayashi.

Additionally, the disclosure of Kobayashi, as pointed out in the Findings of Fact above, supports the Examiner's interpretation that Kobayashi describes a first layer of "metal compound/titanium dioxide" on one surface portion of the substrate and a second layer of the same "metal compound/titanium dioxide" on a second surface portion of the substrate.

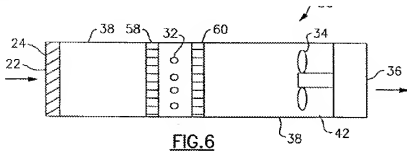
There is nothing in claim 1 to define over the Examiner's reasonable interpretation of Kobayashi. Using this claim construction, Kobayashi anticipates Appellants' claimed invention. Furthermore, Appellants have failed to provide any credible reasoning or evidence why the Examiner's interpretation is unreasonable.

Since anticipation is the epitome of obviousness, we conclude that, based on the Examiner's reasonable claim construction, claim 1 would have been obvious over Kobayashi. *In re Fracalossi*, 681 F. 2d. 792, 794 (CCPA 1982).

Moreover, since Kobayashi describes a plurality of the same and/or different photocatalytic coating layers on a substrate, it would have been prima facie obvious to choose from amongst the explicitly listed alternative metal/titanium dioxide and metal oxide/titanium dioxide coatings described therein. It has been held that a species claim was obvious over a reference disclosing over 1200 possible combinations of two ingredient types useful in diuretic compositions, where the claimed combination was but one of those disclosed. *See Merck & Co. v. Biocraft Labs.*, 874 F. 2d 804, 806-807 (Fed. Cir. 1989). Neither of the claimed ingredients was listed by the reference as being preferred. *Id.* Similar to the situation in *Merck*, the artisan of ordinary skill need only make a choice from a list explicitly set forth in the Kobayashi to select appropriate same and/or different photocatalytic layer compositions. Thus, in our view, the Examiner properly concluded that one of ordinary skill would have considered the "layered catalytic coating" of claim 1 obvious from the explicit teaching, and list, set out in Kobayashi.

ADDITIONAL FINDINGS OF FACT

Appellants' Fig. 6 is reproduced below:



Appellants' Fig. 6 depicts two honeycomb filter substrates 58, 60 arranged in series in an air purification system (Spec. paras. [65], [66]). UV light source 32 activates the photocatalytic coatings located on the honeycomb filters.

Reisfeld teaches the process of removing or reducing organic pollutants from a fluid by contacting the fluid with a photocatalytic titanium dioxide activated by an ultraviolet light source was well known (col. 1, ll. 23).

Reisfeld's Fig. 1 is reproduced below:

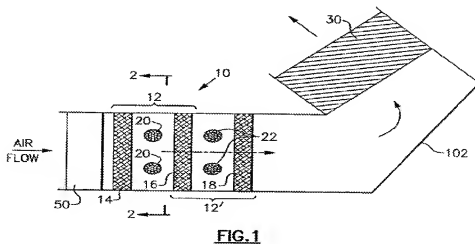


Fig. 1 of Reisfeld exemplifies three honeycomb filter substrates 14, 16, 18 arranged in series in an air purification system.

Reisfeld states “Any suitable structure may be employed, however, the honeycombed structure . . . is preferred because air pressure is maintained as air is directed through filter 10” (col. 3, ll. 35-38). Reisfeld describes that the honeycombed filter elements “include catalytic coating 120 disposed thereon” (col. 3, ll. 38-40). UV lamps 20, 22 activate the photocatalytic coatings located on the honeycomb filters (see, e.g., col. 3, ll. 39-42).

Claim 35

Claim 35 depends from claim 1 and adds “wherein said substrate is a honeycomb”. Kobayashi is silent as to the structure of the substrate upon which the catalytic coating is applied. The Examiner cites Reisfeld³ to exemplify the known structure of a honeycomb filter substrate (Ans. 6).

Appellants do not dispute the Examiner’s finding that the “selection of any known equivalent substrates for the photocatalytic fluid purification would be within the level of ordinary skill in the art”. (App. Br. 5-6). Rather, they contend that the Examiner’s rejection was conclusory and provided no motivation for modifying Kobayashi (App. Br. 10). We disagree.

The use of a honeycomb substrate coated with a photocatalytic coating as shown in Reisfeld to provide an appropriate substrate for the photocatalytic coating of Kobayashi would have been *prima facie* obvious,

³ Reisfeld is commonly assigned to the same assignee, i.e., Carrier Corporation, as the present appeal.

since it would have been no more than the predictable use of a known prior art element for its intended function. *See, KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007) (The question to be asked is “whether the improvement is more than the predictable use of prior art elements according to their established functions.”).

Thus, Appellants have failed to show reversible error in the Examiner’s conclusion of obviousness reached herein.

Claims 20, 37, and 38

Appellants do not separately argue any of these claims. We select claim 20 to represent this claim grouping.

Appellants argue the motivation given by the Examiner (i.e., “this would result in the application of Kobayashi’s photocatalytic material to a photocatalytic fluid purification system”) is merely a goal and is not a reason for combining the references (App. Br. 6). We disagree.

Reisfeld teaches the process of removing or reducing organic pollutants from a fluid by contacting the fluid with a photocatalytic titanium dioxide activated by an ultraviolet light source was well known (col. 1, ll. 23).

The combined teachings of Kobayashi and Reisfeld would have led one of ordinary skill in the art, through no more than ordinary creativity, to use the photocatalytic coating layers of Kobayashi as the photocatalytic coating on the honeycomb porous substrates in the fluid container (e.g., the air duct) of Reisfeld, for the expected improvements of a metal oxide/titanium dioxide (and/or metal/titanium dioxide) photocatalytic coating layer(s) as taught in Kobayashi. *See KSR*, 127 S. Ct. at 1741 (a

“court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”).

Accordingly, Appellants have not shown error in the Examiner’s determination of obviousness.

Claims 7-12, 33, 43, and 44

Appellants do not separately argue any of these claims. We select claim 7, which is dependent upon claim 1, to represent this claim grouping.

Claim 7 adds the limitation of a light source to activate the photocatalytic coating. Appellants do not rely upon any arguments separate from those relied upon for independent claim 1. We do not find any of those arguments persuasive for the reasons set forth above with respect to independent claim 1.

Therefore, we agree with the Examiner’s findings in support of obviousness for claims 7-12, 33, 43, and 44 based on Kobayashi and Reisfeld.

Claims 21-32, 39-42, and 47

Appellants only dispute the Examiner’s determination of obviousness because the reason cited by the Examiner for combining the references, “enhancing the photocatalytic fluid purification”, was “only known through [Appellants’] disclosure” (App. Br. 7). We disagree for the same reasons set forth above with respect to claim 20.

Claim 27

Claim 27 depends from claim 25 which depends from independent claim 21 and recites “wherein said second substrate is proximate to an inlet of the air purification system and said second substrate is distal to said inlet”.

We interpret claim 21 such that the first and second coatings recited therein may be the same coating⁴. Likewise, the first and second coatings recited in claim 25 can be the same, as there appears to be no discernable difference between a “manganese oxide/titanium dioxide” coating and a “metal oxide doped titanium dioxide” coating wherein manganese is the metal oxide. Indeed, Appellants’ Specification supports this claim interpretation (see, e.g., paras. [51] and [66]).

It is undisputed that Reisfeld describes two substrates coated with titanium dioxide photocatalytic coating, one substrate being closer than the other to the inlet.

Appellants’ only contention to dispute the Examiner’s determination of obviousness is that a “mere rearrangement” of the layers of Kobayashi “without motivation for the particular claimed arrangement” is not sufficient to establish obviousness (App. Br. 7). This is not persuasive of error in the Examiner’s rejection.

As set out above, the combined teachings of Kobayashi and Reisfeld would have led one of ordinary skill in the art, through no more than ordinary creativity, to use the same and/or different photocatalytic coating layers as taught in Kobayashi as the photocatalytic coating(s) on the three honeycomb porous substrates in the fluid container (e.g., the air duct) of Reisfeld, for the expected improvements of a metal oxide/titanium dioxide (and/or metal/titanium dioxide) photocatalytic coating layer(s) as taught in

⁴ Appellants did not dispute the Examiner’s reasonable claim interpretation of similar claim language in claim 1 that the same material can be used for each layer (*compare, e.g.,* Ans. 10; App. Br. and Reply Br., generally). Similarly, each of the first and second “coating” of claim 21 may be a “metal compound/titanium dioxide”.

Kobayashi. *See KSR*, 127 S. Ct. at 1741 (a “court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”).

Accordingly, Appellants have not shown error in the Examiner’s determination of obviousness of claim 27.

Claim 47

Claim 47 depends from claim 21 and adds limitations similar to those in claim 1. Appellants’ only argument is that design choice is not an appropriate rationale to support obviousness (App. Br. 8).

However, once again, the claims are drafted such that the “third layer” recited in claim 47 may be the same composition as the first and second coatings recited in claim 21. The coating and third layer located on two surface portions of the same substrate as encompassed by the language of claim 47 is indistinguishable from a final product comprising a single layer of the same material on the substrate (e.g., see Appellants’ Fig. 5).

In any event, we agree with the Examiner’s conclusion of obviousness for similar reasons as we have expressed with respect to claims 21 and 27 above.

CONCLUSION

Appellants have not shown that the Examiner reversibly erred based on Appellants’ arguments.

ORDER

All of the Examiner’s rejections under 35 U.S.C. § 103(a) on appeal are affirmed.

The Examiner's provisional rejection of claims 1-14, 17, 18, and 20-47 on the ground of nonstatutory obviousness-type double patenting is affirmed.

The Primary Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a).

AFFIRMED

PL Initial:
sld

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